In the claims:

1 – 26 canceled.

27. (new) An electrical substrate for use as a carrier of biomolecules in a method for electrochemical detection in an electrolyte solution, comprising:

an insulating support plate that bears a conductive pattern having conductor paths and connecting contact surfaces, and having disposed on the conductor paths test sites for the application of biomolecules;

wherein the conductor paths comprise a metal core made of a highly conductive base metal and a gold layer surrounding the metal core, and the conductor paths are continuously provided with a diffusion barrier layer that prevents direct contact of the electrolyte solution with the metal core during the electrochemical detection method.

28. (new) The electrical substrate according to claim 27, wherein the metal core comprises copper, tungsten, or aluminum.

29. (new) The electrical substrate according to claim 27, wherein the metal core is formed of copper.

30. (new) The electrical substrate according to claim 27, wherein the diffusion barrier layer comprises an interlayer made of nickel, titanium or platinum disposed between the metal core and the external gold layer.

31. (new) The electrical substrate according to claim 30, wherein the interlayer exhibits a thickness of about 2 μm to about 10 μm.

32. (new) The electrical substrate according to claim 27, characterized in that the diffusion barrier layer comprises a lacquer layer applied to the gold layer (18).

33. (new) The electrical substrate according to claim 27, characterized in that the diffusion barrier layer comprises, disposed on the metal core, a gold layer (18) whose pores are substantially closed by the incipient melting of a surface region (26) of the gold layer (18).

34. (new) The electrical substrate according to claim 27, wherein the gold layer (18) exhibits a thickness of about 0.15 μm to about 10 μm.

35. (new) The electrical substrate according to claim 27, characterized in that the diffusion barrier layer is formed by a gold layer that is disposed on the metal core and whose thickness is chosen to be so large that it prevents direct contact of the electrolyte solution with the metal core.

36. (new) The electrical substrate according claim 27, wherein the insulating support plate is a single-sided rigid support plate, a double-sided rigid support plate or a rigid multilayer support plate.

37. (new) The electrical substrate according to claim 27, characterized in that the insulating support plate is a single-sided or double-sided flexible support plate, wherein the single-sided or double-sided support plate is manufactured from a polyimide film or a rigid-flexible support plate.

38. (new) The electrical substrate according claim 27 wherein, the insulating support plate is composed of a base material selected from the group comprising: bismaleimide triazine resin with silica glass, cyanate ester with silica glass, hard paper core with epoxide woven glass fabric outer layers, fiberglass mat core with epoxide woven glass fabric outer layers, phenolic resin paper, hard paper, epoxide woven glass fabric, epoxide woven glass fabric with a cross-linked resin system , polyimide resin with aramide

reinforcement, polytetrafluoroethylene with glass or ceramic, highly cross-linked hydrocarbons with ceramic and glass.

39. (new) The electrical substrate according to claim 27 wherein the insulating support plate is formed by a semiconductor plate or a semiconductor plate provided with a support plate insulation layer.

40. (new) The electrical substrate according to claim 39, wherein the insulating support plate comprises a silicon plate provided with a SiN_x insulating layer.

41. (new) The electrical substrate according to claim 27, characterized in that the conductor paths exhibit a width of about 50 μm to about 250 μm.

42. (new) The electrical substrate according to claim 27, wherein an insulation layer is applied to the gold layer in sub-regions.

43. (new) The electrical substrate according to claim 42, wherein the insulation layer is formed by a thermally curable lacquer, optically curable lacquer, an optically and thermally curable lacquer or a structurable lacquer.

44. (new) The electrical substrate according to claim 42, wherein the insulation layer is formed by a parylene layer.

45. (new) The electrical substrate according to claim 42 wherein the insulation layer exhibits a thickness of about 1 μm to about 30 μm.

46. (new) The electrical substrate according to claim 42 wherein the insulation layer on a portion of the conductor paths exhibits voids that reach to the underlying gold layer and that form test sites for the application of the biomolecules.

47. (new) The electrical substrate according to claim 42 characterized in that the conductive pattern includes one or more

vias that exhibit, disposed at their circumferential edge surface, a metal core made of a highly conductive base metal, and a gold layer surrounding the metal core, and the vias being continuously provided with a diffusion barrier layer that prevents direct contact of the electrolyte solution with the metal core during the electrochemical detection method.

48. (new) The electrical substrate according to claim 47, wherein the metal core of the vias comprises tungsten or aluminum.

49. (new) The electrical substrate according to claim 47 wherein the diffusion barrier layer is formed by an interlayer comprising nickel, titanium, or platinum disposed between the metal core of the vias and the external gold layer.

50. (new) The electrical substrate according to claim 49 wherein the interlayer of the vias exhibits a thickness of about 0.01 μm to about 1 μm.

51. (new) The electrical substrate according to claim 47 wherein the gold layer of the vias has a thickness of about 0.05 μm to about 0.75 μm.